Bikeway Types and Bike Planning

Ed Barsotti
Ride Illinois
630-978-0583
ed@rideillinois.org

Topics

1) Bike planning – why and where

2) Bikeway manuals, standards

3) Off- and on-road bikeways

4) Bike plan and implementation strategies

5) Bikeway grant programs

Why plan for bicycles?

- Quality of life, popular
- Economic development
- Health benefits
- Environmental

Why plan for bicycles?

- Recreation and fitness
- Transportation choice
- Transportation necessity: *safer conditions for the many who don't drive for economic, age, etc.*

Where do they ride?

Beginners/Young Kids

Sidewalks

Where do they ride?

Occasional ("Casual") adult cyclists

- Residential streets
- Trails
- Bike Lanes – also separated, buffered

- A good target audience for your bike planning

Where do they ride?
Experienced cyclists

(The 20% who bike 80% of the miles)

- On streets with other traffic – more traffic-tolerant
- Prefer direct routes, minimum stops, access to all destinations, just like motorists
- Roads should be bike-able for at least these cyclists

Where do they ride?
Teens and the poor

- Often less-skilled, ride sidewalks
- Prefer direct routes, need access to all destinations
- Bike out of necessity
- Many ride at night without lights
- Many ride against traffic flow

Topics

1) Bike planning – why and where

2) Bikeway manuals, standards

3) Off- and on-road bikeways

4) Bike plan and implementation strategies

5) Bikeway grant programs

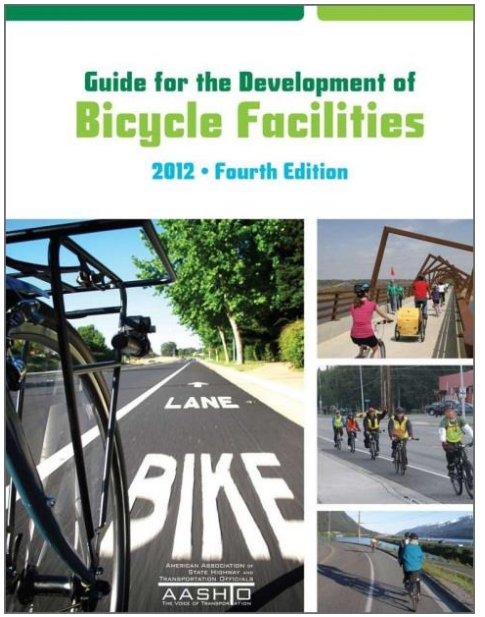
Technical References

AASHTO Bike Guide

"Guide for the Development of Bicycle Facilities" – AASHTO (state DOTs)

Longtime industry standard; it's "guidance", but court-accepted, closely followed

2012 current edition, next edition "soon"



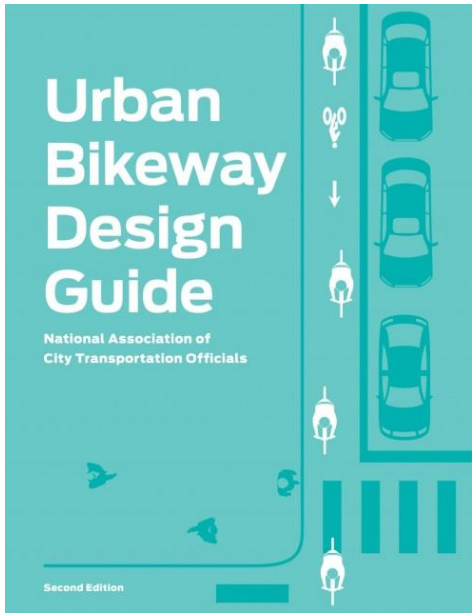
Technical References

NACTO Urban Bikeway Design Guide

By the large cities driving new bikeways and evolution of the field; urban treatments

Federal Highway Administration (FHWA) supports its use (2013), others…

User-friendly Design Guidance, diagrams

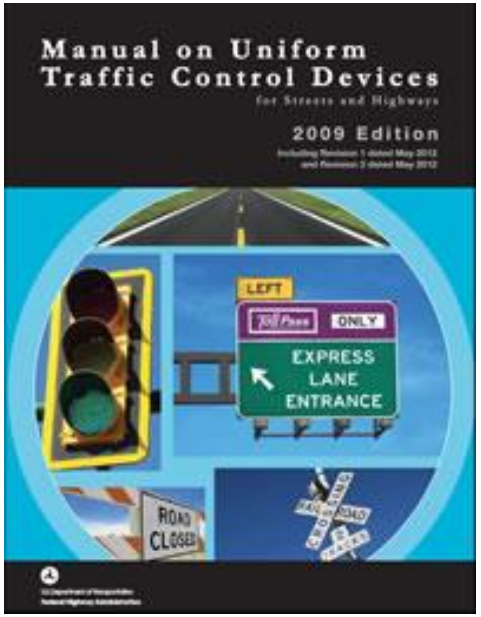


Technical References

Manual on Uniform Traffic Control Devices

"MUTCD" – Part 9 covers national regulations on bikeway signage, marking

2009 current; next is much delayed



Technical References

MUTCD updates

FHWA lists new treatments “Subject to Experimentation”, available through “Interim Approval”, allowed, disallowed…

www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd

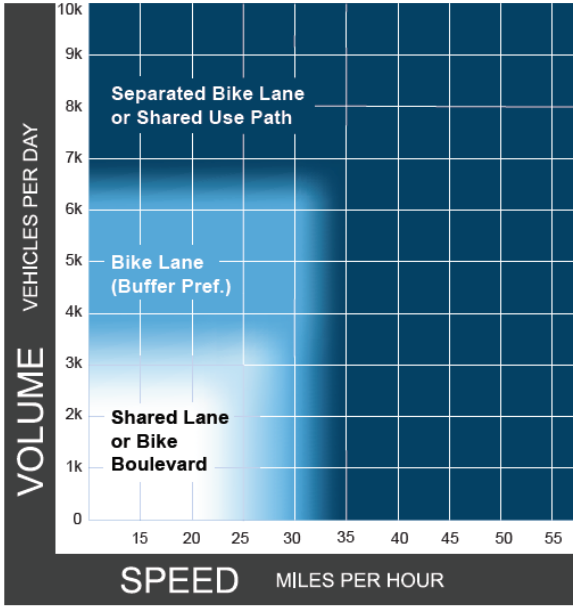
Subject to Experimentation	Available through Interim Approval	Interpretations
		
Two-Stage Turn Box	Green-Colored Pavement	Use of R4-11 Sign on Roads with Speed Limits Above 35mph
		

Technical References

FHWA Bikeway Selection Guide

Recent guidance manual includes:

- Selection graphs vs. speed, volume
- Paved shoulder width vs. speed, vol.
- Intersection performance by bikeway
- Process and real-life examples, with tradeoffs and backups



Technical References

IDOT's BDE and BLRS Manuals

Bureau of Design and Environment (Chap. 17) for IDOT's roads; Bureau of Local Roads and Streets (Chap. 42) for IDOT approval of state/federal-funded local road projects

Had badly lagged behind national, but catching up

Cite AASHTO and FHWA/MUTCD (or NACTO, if compliant with IL's MUTCD), when IDOT's standard not up-to-date

Topics

1) Bike planning – why and where

2) Bikeway manuals, standards

3) Off- and on-road bikeways

4) Bike plan and implementation strategies

5) Bikeway grant programs

Thoughts for this section…

- Brief survey of on- and off-road bikeways
- Rapidly evolving toolbox of bikeway choices
- Choice will vary per various contexts
- Technical/safety/comfort
  – and political, cost, reality
- Know backup options to the ideal

Bikeway types… Trails

* - separate from roadway corridors/rights-of-way

- Along rivers, expressways
- On utility easements
- Railroad corridors

Rails-to-Trails Conservancy has studies to debunk NIMBY fears

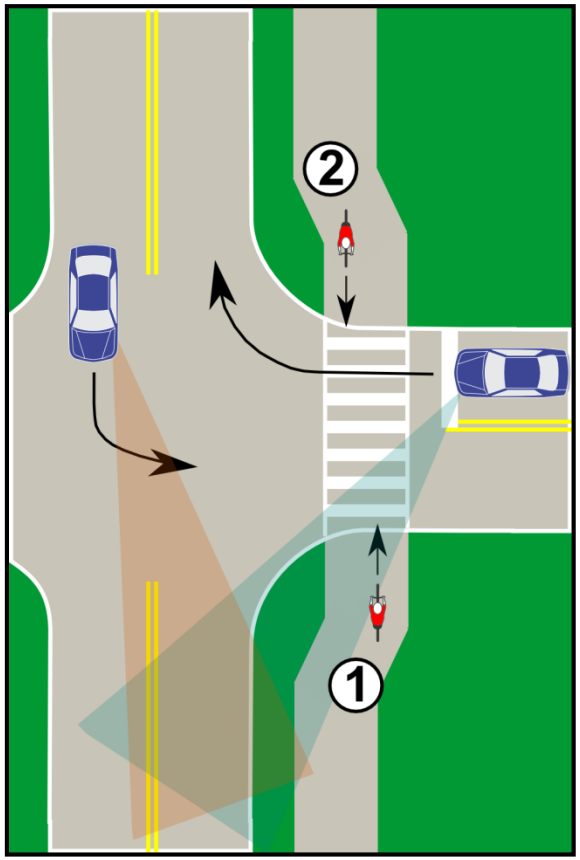
Sidepaths – trails parallel to roads

- 10 ft wide, 5 ft buffer (or barrier)
- Best for busier, faster (40mph+) roads without many crossings
- Not appropriate where lots of driveway/sidestreet crossings (residential front yards?)
- Intersection design critical

Sidepath or sidewalk riding

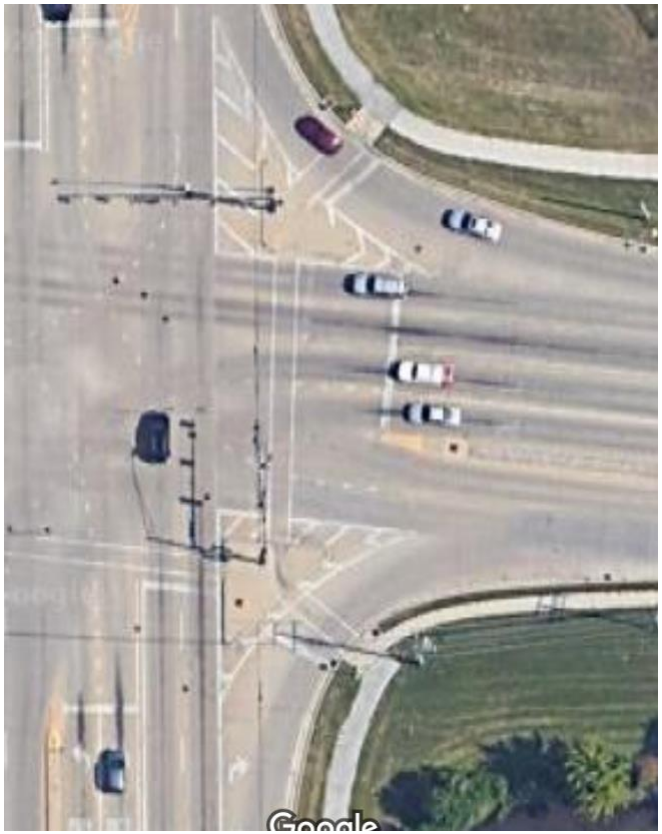
Many believe sidepaths or sidewalks are <u>always</u> safer than on-road

Surprisingly, this is **<u>not true</u>** where there are many crossings – esp. for “contra-flow” cyclists



Sidepaths – right corner islands

Closer stoplines/crosswalks, isolate turning motions, less conflict w/ right-turners



Topics

1) Bike planning – why and where

2) Bikeway manuals, standards

3) Off- and on-road bikeways

4) Bike plan and implementation strategies

5) Bikeway grant programs

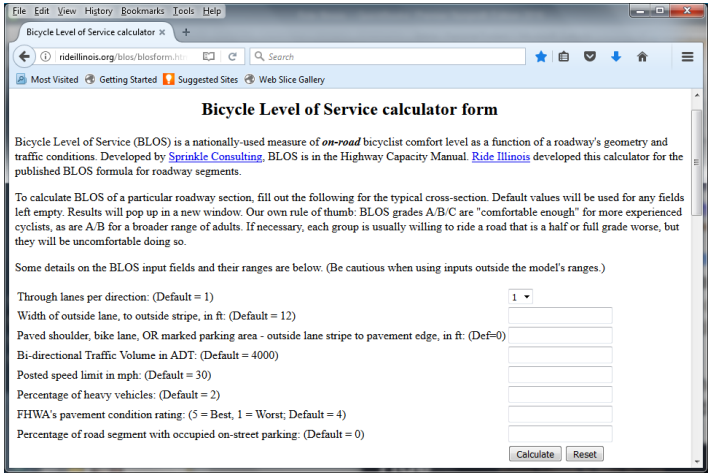
Bicycle Level of Service (BLOS)

On-road bike suitability measure

- Measure of perceived comfort & safety for teen/adult cyclists
- Brings objectivity!!
- For on-road bicycling: based on mid-block roadway geometry and traffic conditions
- In Highway Capacity Manual (it's an official measure)

Online BLOS calculator

rideillinois.org/blos/blosform.htm



Good targets: C or better (advanced cyclists), B or better (casual cyclists)

Striped space – often an improvement of 1 grade

On-road bikeway types – Bike Routes

- Some preferred roadways designated "**Bike Routes**" with signs
- May (should?) include "wayfinding signage" to destinations
- Little improvement to comfort
- No specified geometry; flexible use

On-road bikeway types – Bike Lanes

- Both sides, each 1-way, 5 feet (max. 6 feet)
- Lower-speed (< 40mph) urban arterials, collectors
- Dedicated space attracts broader range of cyclists
- Narrower lanes → traffic calming

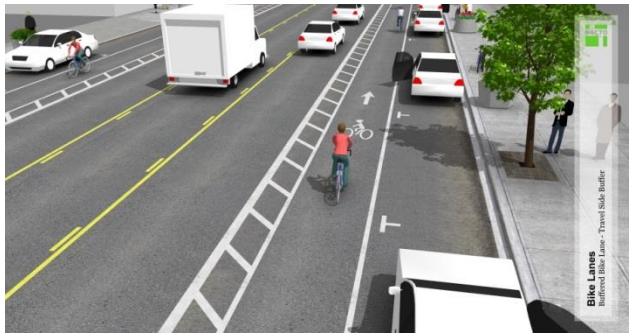
On-road bikeway types – (4-to-3 road diet with) Bike Lanes

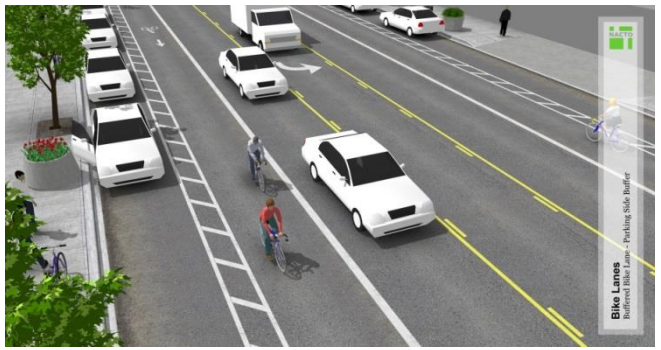
- Possible for less busy 4-lane roads (<10-15K ADT)
- Traffic (intersection) study needed; see FHWA guide

On-road bikeway types – Buffered Bike Lanes

If extra space, improves bike lanes

Buffer on traffic and/or parking side



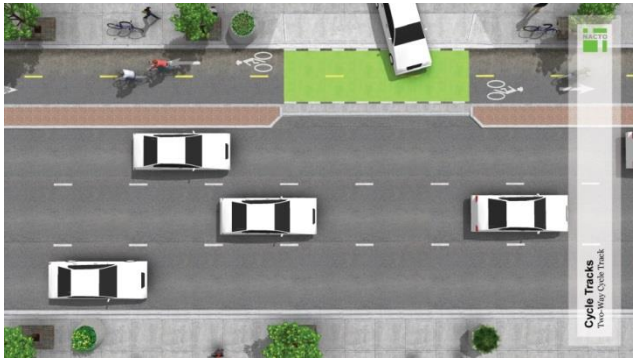


On-road bikeway types –
Separated Bike Lanes (aka Cycle Tracks)

Some type of physical separation

Roads with or without parking

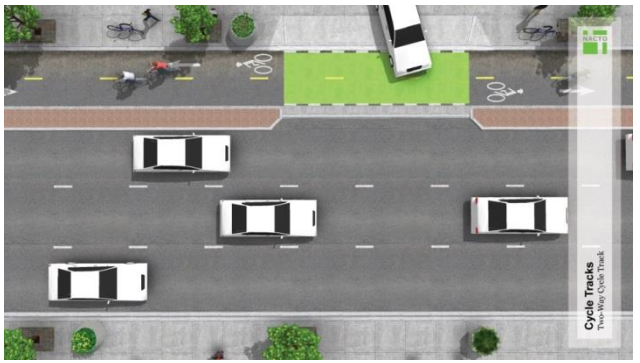
1 or 2 way; intersection design and motorist expectation key – esp. 2-way



On-road bikeway types – Separated Bike Lanes (SBL)

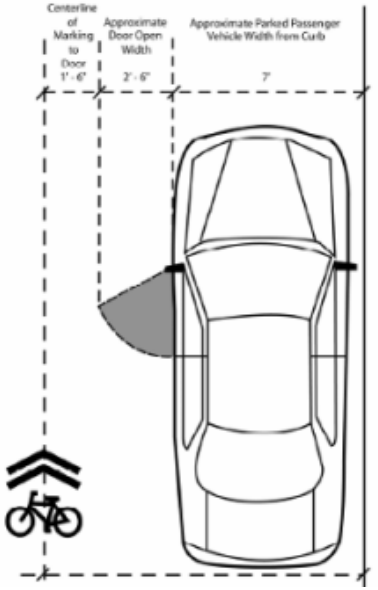
Successful in dense urban areas – best where bike and ped separation needed, cars stop at stoplines…

Elsewhere: SBL + sidewalk, vs. sidepath only?



On-road bikeway types – Shared Lane Markings ("sharrows")

- Where not enough room for bike lanes; low speed
- Centered at least 4-ft out if no parking, 11-ft if so
- Positions cyclists out of "door zone"
- Indicates shared lanes; alerts motorists more effectively than signs



On-road bikeway types – Combined Bike/Parking Lanes

- An unofficial option for wide residential collector streets with LOW traffic and parking occupancy ("party parking"), but politically can't remove

- NOT exclusive "Bike Lanes", more like paved shoulders with general Bike Route signage.

On-road bikeway types – Paved shoulders

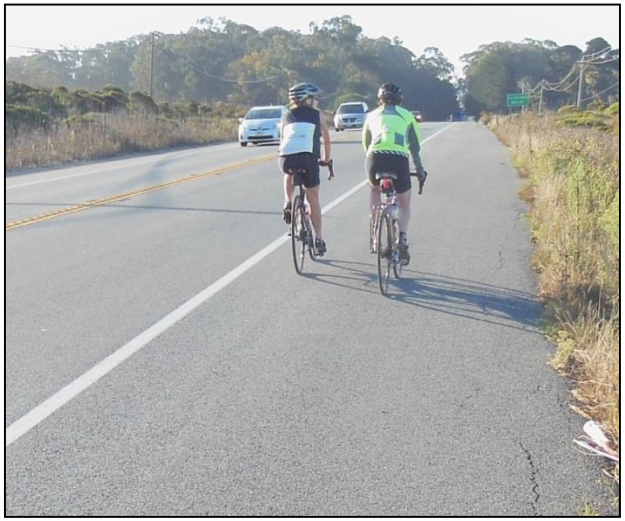
- For significant rural roads

- Vary width with traffic level, type

- Other advantages for motorist safety, road maintenance

- If rumble strips must be used, need >3-ft clear zones, gaps

- Like bike lanes, need sweeping



On-road bikeway types – Warning signage

- A lesser backup
- Popular routes; moderate traffic
- When extra space not possible
- IDOT-approved as R4-102 sign
- Ride Illinois-led requests

Topics

1) Bike planning – why and where

2) Bikeway manuals, standards

3) Off- and on-road trails and bikeways

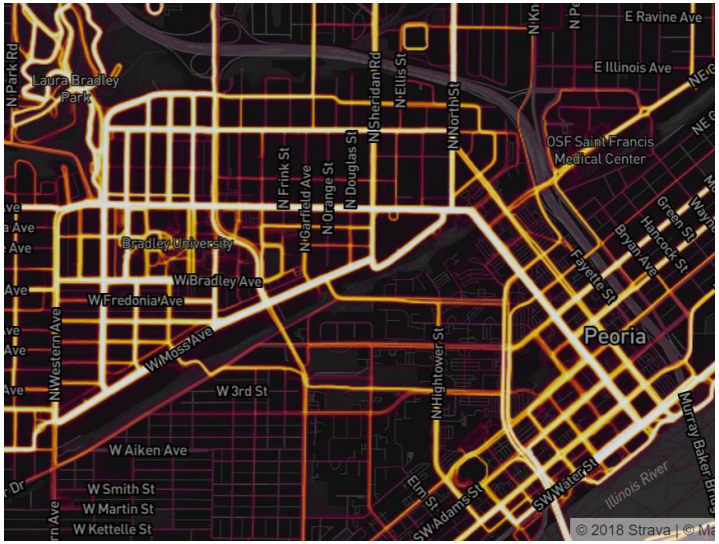
4) Bike plan and implementation strategies

5) Bikeway grant programs

Keys to success in creating and implementing your plan…

- Technical details
- Planning (and political) strategies

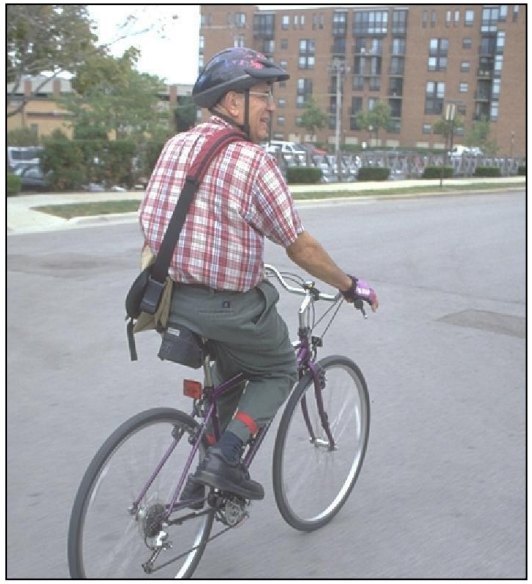
Involve residents who bike!



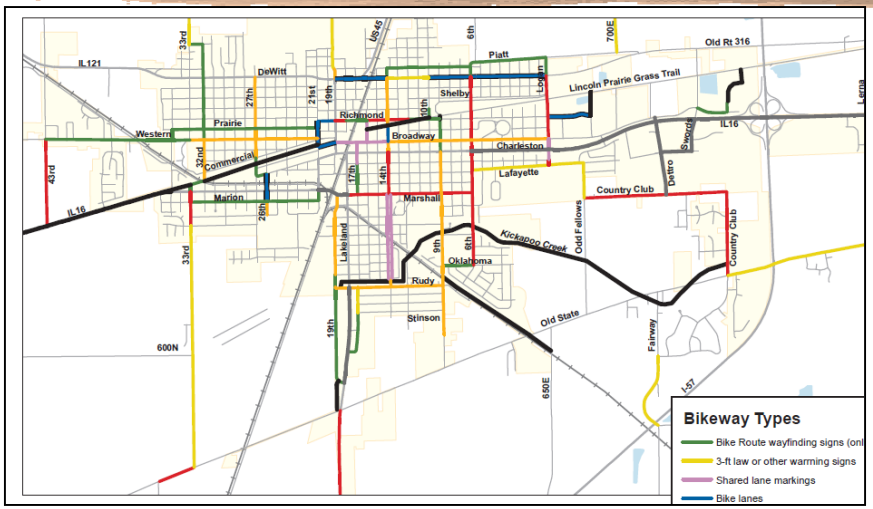
- Lots of knowledge about local conditions
- Many willing to contribute constructively

Plan for target audience of casual adult bicyclists

- Plan for casual adults, yet meet others' needs
- For on-road routes, have sidewalks for kids



Network segments: context and details



- Bike network/grid – continuous, ½ to 1 mile spacing
- Find appropriate treatment for each segment – some will be off-road, some on-road
- Specify details for implementation staff

Find “win-win” solutions benefiting more than cyclists

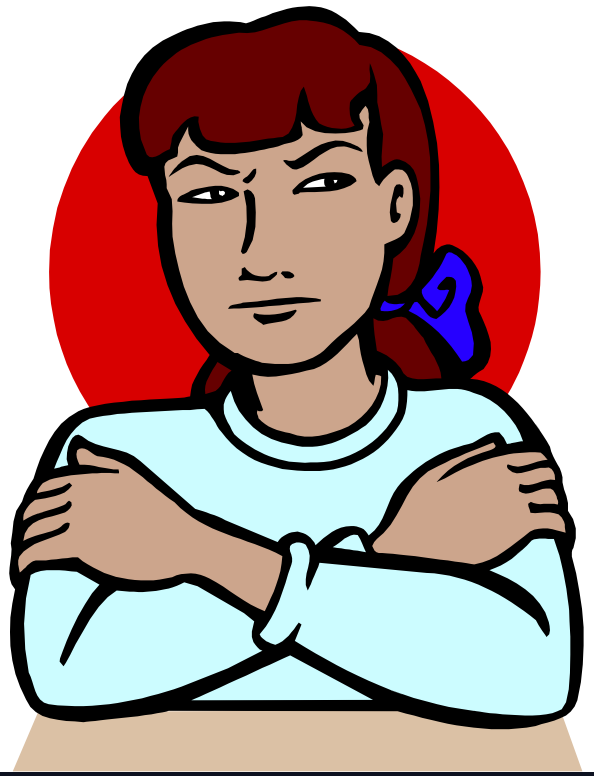
- Traffic calming benefits of striping wide lanes
- Increased home values and “sellability”
- Including pedestrians in plan scope

“Tread lightly” around political landmines

- Removing parking by businesses, maybe even sparsely-occupied residential streets

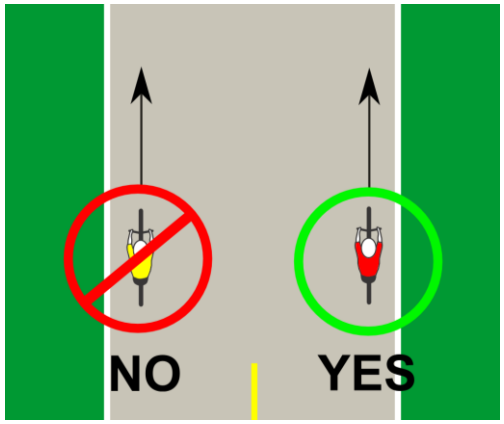
- Widening sidewalks along residential streets

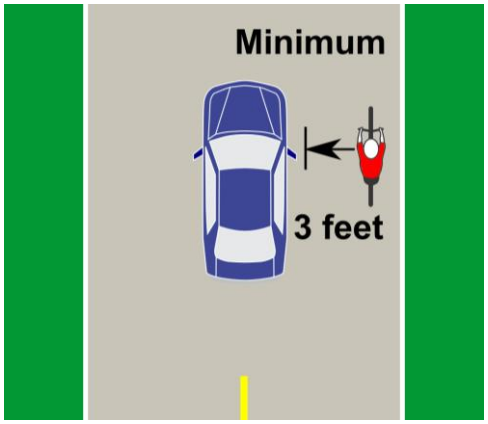
- Retrofitting off-road trails near homes, without facts to combat common fears



Don’t forget the other E’s

- Resources, examples available; often free!
- Cyclist volunteers help, in partnership with city
- Bicyclist & motorist education (e.g. bikesafetyquiz.com)
- Enforcement, encouragement





Save money by being opportunistic

- Edit development ordinance
- Complete Streets policy, road standards
- Review site plan designs, road projects/CIP

Build implementation momentum with "low-hanging fruit"

- Start with cheap, high priority, easy projects
- Gain future support for larger implementation budgets, costlier and tougher projects
- Seek grants (esp. federal) for tougher/larger projects – do easy ones locally

Avoid creating a plan that gathers dust on a shelf!

- Name a staff person in charge; committee
- Mainstream with other staff, including training
- Annual progress report; long term goal (BFC award?)

Topics

1) Bike planning – why and where

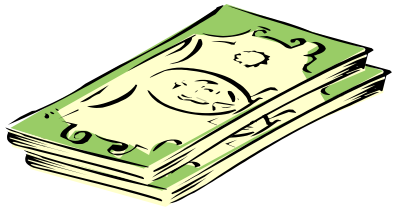
2) Bikeway manuals, standards

3) Off- and on-road trails and bikeways

4) Bike plan and implementation strategies

5) Bikeway grant programs

Bikeway Funding

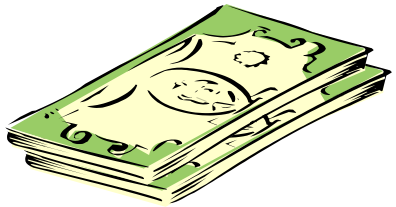


Municipal Capital Improvement Program –
Opportunistic (during road projects); simple retrofit projects (off-road gaps, striping roads, spot improvements, etc.); also non-infrastructure programs (e.g., bike map, etc.) – budget line item

Developer requirements (better in adopted plan and/or development ordinance) – *Road design standards, off-road requirements, easements, bike parking ordinance, impact fee?*

"Outside" grant funding sources – *For larger scale projects; competitive; local match required; beware of implementation time, tougher design requirements*

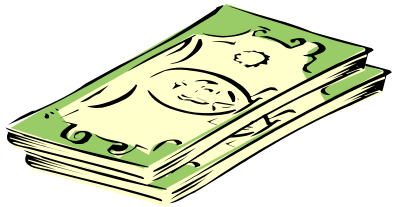
Bikeway Grants – TAP



Transportation Alternatives Program:

- Fed program split between IDOT's Transportation Enhancements Program (ITEP) & largest MPOs
- MPOs make their own grant decisions; 20% match
- Federal process/IDOT review adds cost, delay
- Bikeways top eligible project type

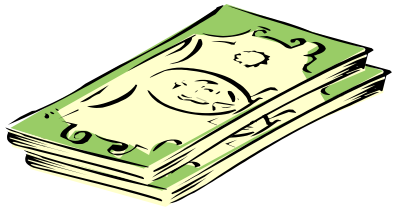
Bikeway Grants – IDOT's ITEP



Illinois Transportation Enhancements Program:

- ~$80M every 2 years (now w/ fed + STATE money)
- Better for larger (>$300K?), more complicated projects; $2M max (may go up); very competitive
- 20% match; partially/fully waived for high-need towns
- Bike part usually funds individual trails, some bridges; but precedents for on-road networks, too
- Much less competitive outside Chicagoland, metro areas

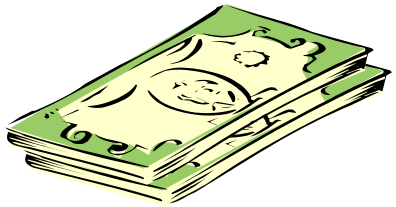
Bikeway Grants – CMAQ



Congestion Mitigation & Air Quality program

- Fed program run by MPOs with poor air quality (Chicagoland, Metro East); 20% match
- Bikeway and trail projects one of several uses
- CMAP (Chicagoland) combines with TAP, requires Ph. 1 engineering done*; will fund larger proj's – Jan 2021 next
- Cost per emissions reduced (density) is key
- Same federal (and IDOT) process as Enhancements

Bikeway Grants – Other federal



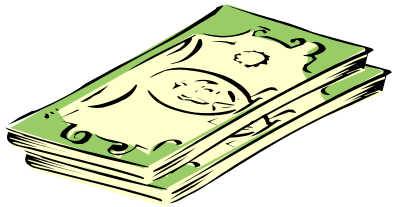
Safe Routes to School (SRTS) 80% federal share, ran by IDOT, irregular application calls, part of TAP ($3M/year?)

Infrastructure (to $250K, competitive) or non-infrastructure (to $100K, supply > demand) near K-8 schools; mostly pedestrian/sidewalks, some bike

Other

1. Recreational Trails Program – IDNR-run, due March 1, part of $1.5M/year can be used for multi-use trails, $200K max
2. Surface Transportation Program (some places flex these $$)

Bikeway Grants – Other IDNR



-Illinois State Bike Path Grant Program

- Once regular $2.5-3M/yr program now sporadic; $1M in 2020
- 50% state, 50% local – reimbursed, $200K limit.
- (Historically) 2:1 supply vs. demand, much simpler process, locals do their own engineering and letting
- For simple and/or phased trails (off-road only)

Thank you for attending!

Ed Barsotti
Ride Illinois
630-978-0583
ed@rideillinois.org